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EXAMINER	
MURPHY, DILLON J	

ART UNIT	PAPER NUMBER
2625	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/002,781	FERLITSCH, ANDREW R.	
	Examiner	Art Unit	
	Dillon J. Murphy	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5 and 7-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 5, 7-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

- This action is responsive to the amendment filed on February 27, 2006.
- Claims 1-3, 5, and 7-18 are pending. Claims 4 and 6 are cancelled.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 27, 2006 has been entered.

Claim Rejections - 35 USC § 112

The 35 U.S.C. 112 rejection of claim 6 has been withdrawn.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claim 18 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows:

Claim 18 defines a "signal" embodied in an electronic transmission with functional descriptive material. While functional descriptive material may be claimed as

a statutory product (i.e., a "manufacture") when embodied on a tangible computer readable medium, a "signal" per se does not fall within any of the four statutory classes of 35 U.S.C. §101. A "signal" is not a process because it is not a series of steps per se. Furthermore, a "signal" is not a "machine", "composition of matter" or a "manufacture" because these statutory classes "relate to structural entities and can be grouped as 'product' claims in order to contrast them with process claims." (1 D. Chisum, Patents § 1.02 (1994)). Machines, manufactures and compositions of matter are embodied by physical structures or material, whereas a "signal" has neither a physical structure nor a tangible material. That is, a "signal" is not a "machine" because it has no physical structure, and does not perform any useful, concrete and tangible result. Likewise, a "signal" is not a "composition of matter" because it is not "matter", but rather a form of energy. Finally, a "signal" is not a "manufacture" because all traditional definitions of a "manufacture" have required some form of physical structure, which a claimed signal does not have.

> A "manufacture" is defined as "the production of articles for use from raw materials or prepared materials by giving to these materials new forms, qualities, properties, or combinations, whether by hand-labor or by machinery." Diamond v. Chakrabarty, 447 U.S. 303, 308, 206 USPQ 193, 196-97 (1980) (quoting American Fruit Growers, Inc. v. Brogdex Co., 283 U.S. 1, 11, 8 USPQ 131, 133 (1931).

Therefore, a "signal" is considered non-statutory because it is a form of energy, in the absence of any physical structure or tangible material, that does not fall within any of the four statutory classes of 35 U.S.C. §101.

NOTE: Refer to Annex IV, section (c) of the USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility", Official Gazette notice of 22 November 2005 (currently at http://www.uspto.gov/web/offices/com/sol/og/2005/week47/patgupa.htm).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 10, 11, 13, 17, and 18 are rejected under 35 U.S.C. 102(e) as being anticipated by Takeda (US 6,229,622).

Regarding claim 1, Takeda teaches a method for interleaving print jobs comprising:

Receiving a plurality of original print jobs at a non-printer computing device (Takeda, col 4, ln 66-67, and col 5, ln 1-8, wherein the spool area in the hard drive receives a plurality of print jobs. Also see fig 2, wherein spool area receives print jobs. Jobs are received by a non-printer computing device. See col 10, ln 63-67, and col 11, ln 1-3, wherein interleaving functions according to Takeda may be performed in part or entirely by a computer, i.e. a non-printer computing device);

Breaking down at least one of said original print jobs into a plurality of smaller sub-jobs with said non-printer computing device (Takeda, col 5, ln 11-52, print jobs are broken into smaller sub-jobs of size Px, where Px is the number of pages per sub-job. Also see col 4, ln 42-45, for example, wherein jobs larger than a predetermined size are broken down into a plurality of smaller sub-jobs);

Tagging said plurality of smaller sub-jobs with an output mode code wherein said output mode code is the same for said smaller sub-jobs originating from the same original print job (Takeda, col 5, ln 59-64, wherein each sub-job Px stored in each spool area are sent to switching stackers, i.e. output trays. Inherently, each sub-job must be tagged with an output mode code in order for sub-jobs to be collected on a per-user basis. Sub-jobs that are collated on a per-user basis are inherently tagged with the same output code originating from the same original user job);

Interleaving said smaller sub-jobs and any remaining original print jobs in an alternating sequence of print jobs with said non-printer computing device, and sending said alternating sequence of print jobs to a printer in said sequence (Takeda, col 5, ln 11-52, printing operation prints all pages "Px" of sub-job "X," and then moves to next sub-job. When all sub-jobs have been processed, operation loops back to first print job's sub-jobs, thereby printing in an alternating order. See col 5, ln 53-58, wherein jobs are sent from spooler to printer in alternating sequence that said jobs are spooled. Also see fig 3B, wherein processing of jobs is continued until print data no longer remains, S7 and S13).

Regarding claim 2, which depends from claim 1, Takeda teaches a method for interleaving print jobs wherein said non-printer computing device is a client computing device (Takeda, col 10, ln 63-67, and col 11, ln 1-3, wherein interleaving functions may be performed in part of entirely by a client computing device).

Regarding claim 10, which depends from claim 1, Takeda further teaches a method wherein said breaking down results in sub-jobs of approximately equal size (Takeda, col 4, ln 40-44, number of pages, Px, of sub-jobs can be controlled independently for each user or set to be equal for all sub-jobs, col 4, ln 54-55).

Regarding claim 11, which depends from claim 1, Takeda further teaches a method wherein said breaking down results in sub-jobs of approximately equal printing time (Takeda, col 4, ln 44-45, size of sub-jobs may alternatively be set to length of time rather than amount of data).

Regarding claim 13, Takeda teaches a method for interleaving print jobs, said method comprising:

Receiving a plurality of original print jobs at a non-printer, print system component before said jobs arrive at a printer (Takeda, col 4, ln 66-67, and col 5, ln 1-8, wherein the spool area in the hard drive receives a plurality of print jobs. Also see fig 2, wherein spool area receives print jobs. Jobs are received by a non-printer computing device. See col 10, ln 63-67, and col 11, ln 1-3, wherein interleaving functions according to Takeda may be performed in part or entirely by a computer, i.e. a non-printer computing device);

Breaking down at least one of said original print jobs into a plurality of smaller sub-jobs with said print system component (Takeda, col 5, ln 11-52, print jobs are broken into smaller sub-jobs of size Px, where Px is the number of pages per sub-job. Also see col 4, ln 42-45, for example, wherein jobs larger than a predetermined size are broken down into a plurality of smaller sub-jobs);

Tagging said plurality of smaller sub-jobs with an output mode code wherein said output mode code is the same for said smaller sub-jobs originating from the same original print job (Takeda, col 5, ln 59-64, wherein each sub-job Px stored in each spool area are sent to switching stackers, i.e. output trays. Inherently, each sub-job must be tagged with an output mode code in order for sub-jobs to be collected on a per-user basis. Sub-jobs that are collated on a per-user basis are inherently tagged with the same output code originating from the same original user job);

Interleaving said smaller sub-jobs and any remaining original print jobs in an alternating sequence of print jobs with said print system component, and sending said alternating sequence of print jobs to a printer in said sequence (Takeda, col 5, ln 11-52, printing operation prints all pages "Px" of sub-job "X," and then moves to next sub-job. When all sub-jobs have been processed, operation loops back to first print job's sub-jobs, thereby printing in an alternating order. See col 5, ln 53-58, wherein jobs are sent from spooler to printer in alternating sequence that said jobs are spooled. Also see fig 3B, wherein processing of jobs is continued until print data no longer remains, S7 and S13).

Regarding claim 17, claim 17 recites identical features as claim 1 except claim 17 is a computer readable medium claim. Thus, arguments similar to that presented above for claim 1 are equally applicable to claim 1. See Takeda, col 2, ln 23-30, wherein printing operation is performed by program in RAM, while hard drive stores a plurality of applications to be run by CPU. Also see Takeda, col 10, ln 63-67, and col 11, ln 1-3, steps are performed by executing program codes read by a computer, separate from a printing device.

Regarding claim 18, claim 18 recites identical features as claim 17 except claim 18 is a method claim, i.e. a computer data signal embodied in an electronic transmission performing method steps. Thus, arguments similar to that presented above for claim 17 are equally applicable to claim 18. Applicant's attention is further directed to col 2, ln 16-17 of Takeda, wherein signals are transmitted within a LAN transmission line.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 3 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda (US 6,229,622) in view of Keeney et al. (US 6,748,471), hereafter referred to as Takeda and Keeney.

Regarding claim 3, which depends from claim 1, Takeda teaches a method for interleaving print jobs comprising receiving print jobs, breaking down said jobs into smaller sub-jobs, interleaving said sub-jobs in an alternating sequence, and sending said sub-jobs to a printer in said sequence, wherein the receiving, breaking down, and interleaving performed at a non-printer computing device, as explained above in the rejection of claim 1. Takeda does not disclose expressly a method for interleaving print jobs wherein said non-printer computing device is a network print server. Keeney, however, discloses a spooling server that may receive a plurality of print jobs (Keeney, col 6, ln 42-44, jobs are received by spooling server, also see fig 9, wherein a plurality of jobs are in print job storage #52), performing as a network server.

Takeda and Keeney are combinable because they are from a similar field of endeavor of print processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the method of receiving print jobs at a print server of Keeney with the method for interleaving print jobs comprising receiving print jobs, breaking down said jobs into smaller sub-jobs, interleaving said sub-jobs in an alternating sequence, and sending said sub-jobs to a printer in said sequence, wherein the receiving, breaking down, and interleaving performed at a non-printer computing device. The motivation for doing so would have been to provide a repository that is accessible, e.g., via a global communication network such as the Internet, to

authorized users at any time of day (Keeney, col 6, ln 27-30). The suggestion for doing so was given by Takeda in col 10, ln 42-45, wherein the method of interleaving of Takeda may be applied to a system constituted by a plurality of devices (e.g., a host computer, interface, reader, printer, etc.). Therefore, it would have been obvious to combine Keeney with Takeda to obtain the invention as specified in claim 3.

Regarding claim 16, the combination of Takeda and Keeney teaches a system for interleaving print jobs before said print jobs arrive at a printer, said system comprising:

A receiver for receiving a plurality of original print jobs, before said print jobs arrive at a printer (Takeda, col 4, ln 66-67, and col 5, ln 1-8, wherein the spool area in the hard drive receives a plurality of print jobs. Also see fig 2, wherein spool area receives print jobs. Jobs are received by a non-printer computing device. See col 10, ln 63-67, and col 11, ln 1-3, wherein interleaving functions according to Takeda may be performed in part or entirely by a computer, i.e. a non-printer computing device. Additionally, see Keeney, fig 9, for Print Job Receiver #58 for receiving print jobs); A partitioner for breaking down at least one of said original print jobs into a plurality of smaller sub-jobs (Takeda, col 5, ln 11-52, print jobs are broken into smaller sub-jobs of size Px, where Px is the number of pages per sub-job. Also see col 4, ln 42-45, for example, wherein jobs larger than a predetermined size are broken down into a plurality of smaller sub-jobs. Partitioning is performed by operations in spooler); a tagger for tagging said plurality of smaller sub-jobs with an output mode code wherein said output mode code is the same for all said smaller sub-jobs originating from the same original

print job (Takeda, col 5, ln 59-64, wherein each sub-job Px stored in each spool area are sent to switching stackers, i.e. output trays. Inherently, each sub-job must be tagged with an output mode code in order for sub-jobs to be collected on a per-user basis. Sub-jobs that are collated on a per-user basis are inherently tagged with the same output code originating from the same original user job. Tagging is performed by spooling unit); an interleaver for interleaving said smaller sub-jobs and any remaining original print jobs in an alternating sequence of print jobs (Takeda, H/D (Hard drive) #202 comprises spooler area which comprises methods for breaking down and interleaving print jobs. See col 5, ln 11-52, print jobs are broken into smaller sub-jobs of size Px, where Px is the number of pages per sub-job. The printing operation prints all pages "Px" of sub-job "X," and then moves to next sub-job. When all sub-jobs have been processed, operation loops back to first print job's sub-jobs, thereby printing in an alternating order. See col 5, ln 53-58, wherein jobs are sent from spooler to printer in alternating sequence that said jobs are spooled. Also see fig 3B, wherein processing of jobs is continued until print data no longer remains, S7 and S13), and a sender for sending said sub-jobs to a printer (Keeney, fig 9, transmitter #57 sends requested print job to printer polling device #100, and on to the requesting printer).

Claims 5 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda (US 6,229,622) in view of Hansen (US 6,509,974), hereafter referred to as Takeda and Hansen.

Regarding claim 5, which depends from claim 1, Takeda teaches a method for interleaving print jobs comprising receiving print jobs, breaking down said jobs into smaller sub-jobs, interleaving said sub-jobs in an alternating sequence, and sending said sub-jobs to a printer in said sequence, wherein the receiving, breaking down, and interleaving performed at a non-printer computing device, as explained above in the rejection of claim 1. Takeda does not disclose expressly a method for interleaving print jobs wherein said breaking down in performed by a software print system component in an operating system print server. Hansen, however, teaches a method for spooling and queuing jobs and job content, directing jobs to the proper output device, and providing load-balancing among the various production output devices (Hansen, col 7, ln 32-42), wherein the methods are performed by a software print system component in an operating system print server (Hansen, col 7, ln 25-28, processes performed by an operating system in a print server).

Takeda and Hansen are combinable because they are from a similar field of endeavor of print processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the method of Hansen wherein said breaking down in performed by the software print system in an operating system printer server with the method for interleaving print jobs comprising receiving print jobs, breaking down said jobs into smaller sub-jobs, interleaving said sub-jobs in an alternating sequence, and sending said sub-jobs to a printer in said sequence, wherein the receiving, breaking down, and interleaving performed at a non-printer computing device. The motivation for doing so would have been to offer a user interface ability

through software to configure and manage print server operations, as well as providing a print server engine that performs the automated processes of the print server (Hansen, col 7, ln 28-32). Additionally, the suggestion for doing so was given by Takeda in col 10, ln 42-45, wherein the method of interleaving of Takeda may be applied to a system constituted by a plurality of devices (e.g., a host computer, interface, reader, printer, etc.). Therefore, it would have been obvious to combine Hansen with Takeda to obtain the invention as specified in claim 5.

Regarding claim 9, which depends from claim 5, the combination of Takeda and Hansen teaches a method for interleaving print jobs wherein said print system component is a network print driver (Hansen, col 7, ln 25-30, print system component comprises a software print server application, wherein application configures and manages print server operation (i.e. job setting, distribution, printing in general), therefore it would have been obvious that the print server application was a network print driver).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda (US 6,229,622) in view of Hansen (US 6,509,974) and further in Utsunomiya et al. (US 5,822,500), hereafter referred to as Takeda, Hansen, and Utsunomiya.

Regarding claim 7, which depends from claim 5, the combination of Takeda and Hansen teach a method for interleaving print jobs comprising receiving print jobs, breaking down said jobs into smaller sub-jobs, interleaving said sub-jobs in an alternating sequence, and sending said sub-jobs to a printer in said sequence, wherein

the receiving, and interleaving are performed at a non-printer computing device and wherein the breaking down is performed by a software print system component in an operating system print server, as explained above in the rejection of claim 5. The combination of Takeda and Hansen does not disclose expressly a method for interleaving print jobs wherein said print system component is independent of an operating system print driver. Utsunomiya, however, teaches a method for interleaving print jobs wherein said print system component is independent of an operating system print driver (Utsunomiya, col 5, ln 58-67 and col 6, ln 1-11, breaking down of print jobs is performed by CPU, wherein CPU operates independently of an operating system print driver, i.e. without a driver).

Takeda, Hansen, and Utsunomiya are combinable because they are from a similar filed of endeavor of print processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the method of Utsunomiya comprising a print system component that is independent of an operating system print driver with the combination of Takeda and Hansen comprising a method for interleaving print jobs comprising receiving print jobs, breaking down said jobs into smaller sub-jobs, interleaving said sub-jobs in an alternating sequence, and sending said sub-jobs to a printer in said sequence, wherein the receiving, and interleaving are performed at a non-printer computing device and wherein the breaking down is performed by a software print system component in an operating system print server. The suggestion for doing so would have been to provide a printer apparatus and method of controlling the same, in which a later printing job can be executed before an

earlier print job is finished, thereby making it possible to improve the efficiency of the overall printing system (Takeda, col 1, ln 32-36), as well as providing centralized control in the form of a server to combine an image processing apparatus which can connected to a plurality of data generating sources (Utsunomiya, col 1, ln 41-43). Therefore, it would have been obvious to combine Utsunomiya with the aforementioned combination of Takeda and Hansen to obtain the invention as specified in claim 7.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda (US 6,229,622) in view of Hansen (US 6,509,974) and further in view of Keeney et al. (US 6,748,471), hereafter referred to as Takeda, Hansen, and Keeney.

Regarding claim 8, which depends from claim 5, the combination of Takeda and Hansen teach a method for interleaving print jobs comprising receiving print jobs, breaking down said jobs into smaller sub-jobs, interleaving said sub-jobs in an alternating sequence, and sending said sub-jobs to a printer in said sequence, wherein the receiving, and interleaving are performed at a non-printer computing device and wherein the breaking down is performed by a software print system component in an operating system print server, as explained above in the rejection of claim 5. The combination of Takeda and Hansen does not disclose expressly a method for interleaving print jobs wherein said print system component is a network print spooler that is independent of a printer. Keeney, however, teaches a method wherein said print system component is a network print spooler that is independent of a printer (Keeney, col 6, ln 42-44, jobs are received by spooling server, also see fig 9, wherein a plurality

of jobs are in print job storage #52. After jobs are received by spooling server of Keeney, breaking down by a software print system component in an operating system print server continues as taught by Takeda and Hansen).

Takeda, Hansen, and Kenney are combinable because they are from a similar field of endeavor of print processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the method of Keeney comprising using a network print spooler that is independent of a printer with the combination of Takeda and Hansen comprising a method for interleaving print jobs comprising receiving print jobs, breaking down said jobs into smaller sub-jobs, interleaving said sub-jobs in an alternating sequence, and sending said sub-jobs to a printer in said sequence, wherein the receiving, and interleaving are performed at a non-printer computing device and wherein the breaking down is performed by a software print system component in an operating system print server. The motivation for doing so would have been to provide a repository that is accessible, e.g., via a global communication network such as the Internet, to authorized users at any time of day (Keeney, col 6, ln 27-30). Therefore, it would have been obvious to combine Keeney with the aforementioned combination of Takeda and Hansen to obtain the invention as specified in claim 8.

Claim 12, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takeda (US 6,229,622) in view of Rabjohns et al. (US 5,697,040), hereafter referred to as Takeda and Rabjohns.

Regarding claim 12, which depends from claim 1, Takeda teaches a method for interleaving print jobs comprising receiving print jobs, breaking down said jobs into smaller sub-jobs, interleaving said sub-jobs in an alternating sequence, and sending said sub-jobs to a printer in said sequence, wherein the receiving, breaking down, and interleaving performed at a non-printer computing device, as explained above in the rejection of claim 1. Takeda does not disclose expressly a method wherein said alternating sequence places sub-jobs originating from smaller original print jobs toward the front of the print order. Rabjohns, however, teaches a method for interleaving print jobs wherein said alternating sequence places sub-jobs originating from smaller original print jobs toward the front of the print order (Rabjohns, col 6, ln 12-18, smaller jobs are interleaved into larger jobs, moving the smaller jobs towards the front of the print order).

Takeda and Rabjohns are combinable because they are from the same field of endeavor of print interleaving. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the method of inserting smaller print jobs towards the front of the print order of Rabjohns with the method of Takeda for interleaving print jobs comprising receiving print jobs, breaking down said jobs into smaller sub-jobs, interleaving said sub-jobs in an alternating sequence, and sending said sub-jobs to a printer in said sequence, wherein the receiving, breaking down, and interleaving performed at a non-printer computing device. The suggestion for doing so would have been to provide a printer apparatus and method of controlling the same, in which a later printing job can be executed before an earlier print job is finished, thereby making it possible to improve the efficiency of the overall printing system (Takeda, col 1,

ln 32-36), and to blend images of a second job with the images of a first job during the first job processing (Rabjohns, col 2, ln 8-11), especially when said second job is smaller in length than said first job. Additionally, the suggestion for combining multiple components was given by Takeda in col 10, ln 42-45, wherein the method of interleaving of Takeda may be applied to a system constituted by a plurality of devices (e.g., a host computer, interface, reader, printer, etc.). Therefore, it would have been obvious to combine Rabjohns with Takeda to obtain the invention as specified in claim 12.

Regarding claim 14, the combination of Takeda and Rabjohns further teaches a method for reducing delay of smaller print jobs in a print queue, said method comprising: receiving a plurality of original print jobs at a print system component before said print jobs arrive at a printer (Takeda, col 3, ln 17-20, printer apparatus receives jobs from network via LAN, also col 5, ln 11-15, print jobs stored in memory, with each job corresponding to an indices "X," indicating a plurality of jobs. As is taught by Takeda, part of or all of interleaving functions may be performed by a separate computer, i.e. before a printer, or in discrete network components, wherein the printer is the last step), said plurality of original print jobs comprising at least one larger print job and at least one smaller print job (Rabjohns, col 6, ln 12-18, smaller jobs are interleaved into larger jobs, moving the smaller jobs towards the front of the print order); breaking down said larger original print job into smaller sub-jobs (Takeda, col 5, ln 11-52, print jobs are broken into smaller sub-jobs of size Px, where Px is the number of pages per sub-job); tagging said smaller sub-jobs with an output mode code (Takeda, col 5, ln 59-

64, wherein each sub-job Px stored in each spool area are sent to switching stackers, i.e. output trays. Inherently, each sub-job must be tagged with an output mode code in order for sub-jobs to be collected on a per-user basis. Sub-jobs that are collated on a per-user basis are inherently tagged with the same output code originating from the same original user job); interleaving said sub-jobs with said smaller original print job in an alternating sequence, and sending said sub-jobs and said smaller original print job to a printer in said sequence (Takeda, col 5, ln 11-52, printing operation sends all pages "Px" of sub-job "X" to a printer, and then moves to next sub-job. When all sub-jobs have been processed, operation loops back to first print job's sub-jobs, thereby printing in an alternating order).

Regarding claim 15, which depends from claim 14, the combination of Takeda and Rabjohns further teaches a method further comprising breaking down said smaller original print job into smaller sub-jobs and wherein said interleaving comprises interleaving said smaller sub-jobs from said larger print job with said smaller sub-jobs from said smaller print job (Takeda, col 5, ln 11-52, print jobs are broken into smaller sub-jobs of size Px, where Px is the number of pages per sub-job. Also see Rabjohns, col 7, ln 7-19, both small and large jobs are broken into smaller sub-jobs and interleaved to improve printer efficiency).

Response to Arguments

Applicant's arguments filed February 27, 2006 have been fully considered but they are not persuasive. Applicant argues, on pages 7-10 of Remarks, that adding the

limitation "tagging said plurality of smaller sub-jobs with an output mode code wherein said output mode code is the same for all said smaller sub-jobs originating from the same print job" to claims 1, 13, 16, 17, and 18 overcomes the teachings of Takeda and the combined references. Additionally, applicant argues, on page 10, that adding the limitation "tagging said smaller sub-jobs with an output mode code" overcomes the teachings of the combination of Takeda in view of Rabjohns. The examiner respectfully disagrees, citing the applicant's specification on page 16, lines 7-10, for example, which states that "Output modes may comprises a printer tray destination, printer tray offset, page orientation, media type, media size or other criteria that can be used to distinguish printer output." In Takeda, col 5, ln 59-64, sub-jobs stored in a spool area discharged to a switchable stacker to be collected on a per-user basis after being printer. The switching of the switchable stacker is performed for print job data in each spool area, and spool areas are provided for each user (Takeda, col 4, ln 31-32). Inherently sub-jobs in each spool area must be tagged with an output mode code for a job to be directed to an output tray in the switchable stacker. Inherently the output mode code must be the same for all smaller sub-jobs originating from the same print job to be collected on a per-user basis.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dillon J. Murphy whose telephone number is (571) 272-5945. The examiner can normally be reached on M-F, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Williams can be reached on (571) 272-7471. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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